



Absolute encoders AFS/AFM60 SSI

AFM60B-BCKA032768

Model Name > [AFM60B-BCKA032768](#)
Part No. > [AFM60B-BCKA032768](#)



At a glance

- High-resolution absolute encoders with up to 30 bits (AFM60) or up to 18 bits (AFS60)
- Face mount flange, servo flange, blind or through hollow shaft
- SSI, SSI + Incremental or SSI + Sin/Cos interface
- Programmable resolution and offset (dependent on type)
- Connection system: M12, M23 connector or cable outlet
- Enclosure rating: IP 67 (housing), IP 65 (shaft)
- Operating temperature: -30 °C to +100 °C (depends on type)

Your benefits

- Programmability of the encoders means less storage, greater machine availability and easy installation
- Precise positioning due to high resolutions
- Large selection of mechanical interfaces and electrical contacting possibilities: Suitable for all applications
- Suitable for applications with limited space requirements (extremely short installation depth of 30 mm)
- Very good rotation accuracy due to increased bearing distance
- One programming tool and software with automatic encoder detection for AFS60/AFM60/DFS60



Performance

Max. number of steps per revolution:	32,768
Max. number of revolutions:	4,096
Resolution power:	32,768 x 4,096
Resolution:	15 bit x 12 bit
Error limits:	± 0.05 °
Repeatability (Ta not constant):	0.002 °
Measuring step deviation:	± 0.01 °
Initialization time:	50 ms ¹⁾

¹⁾ Valid positional data can be read once this time has elapsed

Mechanical data

Mechanical interface:	Blind hollow shaft
Shaft diameter:	3/8 "
Mass:	0.2 kg

Start up torque:	0.8 Ncm (20 °C)
Operating torque:	0.6 Ncm (20 °C)
Maximum operating speed:	6,000 /min ¹⁾
Moment of inertia of the rotor:	40 gcm ²
Bearing lifetime:	3.0 x 10 ⁹ revolutions
Max. angular acceleration:	500,000 rad/s ²
Permissible movement axial static/dynamic:	± 0.5 mm, ± 0.2 mm
Permissible movement radial static/dynamic:	± 0.3 mm, ± 0.1 mm

¹⁾ Self warming of 3.3 K per 1000 revolutions/min when applying note working temperature range

Electrical data

Power consumption:	0.5 W (without load)
Operating voltage range:	4.5 V DC ... 32 V DC
Maximum output frequency:	200 kHz
Load resistance min.:	120 Ω
MTTFd: mean time to dangerous failure:	250 a (EN ISO 13849-1) ¹⁾

¹⁾ This product is a standard product and does not constitute a safety component as defined in the Machinery Directive.

Calculation based on nominal load of components, average ambient

temperature 40°C, frequency of use 8760 h/a. All

electronic failures are considered hazardous. For more information, see document no. 8015532.

Interfaces

Electrical interface:	Connector M23, 12-pin, radial
Interface signals:	Clock +, Clock -, Data +, Data-, Sin +, Sin -, Cos +, Cos -: analog, differential
Clock frequency:	2 MHz ¹⁾
SET (electronic adjustment):	H-active (L ≡ 0 - 1,5 V, H ≡ 2,0 - Us V)
CW/CCW (counting sequence when turning):	L-active (L ≡ 0 - 1,5 V, H ≡ 2,0 - Us V)
Signal before differential generation:	± 20 %
Signal offset:	2.5 V ± 10 %

¹⁾

Ambient data

EMC:	(according to EN 61000-6-2 and EN 61000-6-3) ¹⁾
Enclosure rating:	IP 65 (according to IEC 60529), shaft side, IP 67 (according to IEC 60529)
Permissible relative humidity:	90 % (condensation of the optical scanning not permitted)
Working temperature range:	-30 °C ... 100 °C
Storage temperature range:	-40 °C ... 100 °C, without package
Resistance to shocks:	70 g (according to EN 60068-2-27)
Resistance to vibration:	30 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

¹⁾ ²⁾ With mating connector fitted

Technical drawing of the M23 x 1 1/2, showing three views: side view, front view, and top view. The side view shows a profile with dimensions: 45.5 (1.79) total width, 9.4 (0.37) for the top flange, 3.4 (0.13) for the mounting flange, 2.5 (0.10) for the base, 14.5 (0.57) for the mounting flange height, 7.75 (0.31) for the base height, and a central hole of Ø 32.6 (1.28) with a tolerance of Ø 60 (2.36). The front view shows a central hole of Ø 3.2 (+0.1 / -0.13) and a mounting flange of 20 (0.79). The top view shows a circular profile with a diameter of 72 ± 0.3 (2.83) and a mounting flange of 47 (1.85). The drawing also includes a detail of the mounting flange with dimensions 26.1 (1.03) and 13 (0.51), and a detail of the base with dimensions 14.5 (0.57) and 7.75 (0.31). The drawing is labeled with 'A' and 'Ø x F7'.

The diagram shows a circular board with 12 numbered positions (1-12) arranged in a circle. There are also 4 corner positions, represented by small circles at the corners of the square frame. The positions are numbered as follows: 1 (top-left), 2 (left), 3 (bottom-left), 4 (bottom), 5 (bottom-right), 6 (right), 7 (top-right), 8 (top), 9 (top-center), 10 (center), 11 (bottom-center), and 12 (right-center).

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